# BioMap and Living Waters

# Guiding Land Conservation for Biodiversity in Massachusetts

# **Core Habitats of Leverett**

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is <u>not</u> intended for use in state regulations.

Produced by:

Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

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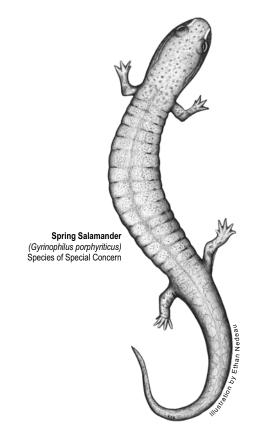
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\* Depending on the location of Core Habitats, your city or town may not have all of these sections.



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Guiding Land Conservation for Biodiversity in Massachusetts

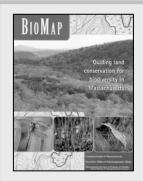
## Introduction

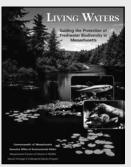
In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generatons to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, BioMap and Living Waters. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

#### What is a Core Habitat?

Both BioMap and Living Waters delineate Core *Habitats* that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.





Get your copy of the BioMap and Living Waters reports! Contact Natural Heritage at 508-792-7270, Ext. 200 or email natural.heritage@state.ma.us. Posters and detailed technical reports are also available.

## **Core Habitats and Land Conservation**

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the *riparian areas*, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

## In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as Supporting Natural *Landscape* provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was



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# BioMap and Living Waters:

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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, *Critical Supporting Watersheds* highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from <a href="https://www.mass.gov/mgis">www.mass.gov/mgis</a>.

# **Understanding Core Habitat Species, Community, and Habitat Lists**

## What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the <u>entire</u> Core Habitat, not just the portion that falls within your city or town. For a list of <u>all</u> the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at <u>www.nhesp.org</u>.

The list of species and communities within a Core Habitat contains <u>only</u> the species and

**Table 1.** The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap		
	Species and Verified Natural Community Types	
Biodiversity Group	Included in BioMap	Total Statewide
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types
Living Waters		
	Species	
Biodiversity Group	Included in Living Waters	Total Statewide
Aquatic		
Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant



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# BioMap and Living Waters:

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species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

## What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- Endangered species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- *Threatened* species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- **Special Concern** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial watch list of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural

## **Legal Protection of Biodiversity**

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The *Massachusetts Natural Heritage Atlas* shows Priority Habitats, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and Estimated Habitats, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

communities reflects the documented number and acreages of each community type in the state:

- Critically Imperiled communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- *Imperiled* communities typically have 6-20 sites or few remaining acres in the state.
- *Vulnerable* communities typically have 21-100 sites or limited acreage across the state.
- **Secure** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.



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# Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific *fact sheets* at <a href="https://www.nhesp.org">www.nhesp.org</a>.

# **Next Steps**

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

## **Protecting Larger Core Habitats**

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be

very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

#### **Additional Information**

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone 508-792-7270, Ext. 200

by Fax: 508-792-7821

by Email: natural.heritage@state.ma.us.

by Mail: North Drive

Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
  - Field guides
  - \* Natural Heritage Atlas, and more!



Massachusetts Division of Fisheries and Wildlife

# **BioMap: Species and Natural Communities**

# Leverett

## **Core Habitat BM522**

## **Natural Communities**

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Black Ash-Red Maple-Tamarack
Calcareous Seepage Swamp
Imperiled

Calcareous Rock Cliff Community Vulnerable

Calcareous Seepage Marsh Imperiled

Calcareous Sloping Fen Imperiled

Calcareous Talus Forest/Woodland Vulnerable

Forest Seep Community Secure

High-Energy Riverbank Vulnerable

Major-River Floodplain Forest Imperiled

Rich, Mesic Forest Community

Vulnerable

Shrub Swamp Secure

Small-River Floodplain Forest Imperiled

Transitional Floodplain Forest Imperiled

## **Plants**

Common Name Scientific Name Status

A Filmy-Fern Trichomanes intricatum Endangered

Adder's-Tongue Fern Ophioglossum pusillum Threatened

Autumn Coralroot Corallorhiza odontorhiza Special Concern

Climbing Fumitory Adlumia fungosa Threatened

Green Rock-Cress Arabis missouriensis Threatened

Intermediate Spike-Sedge Eleocharis intermedia Threatened

Many-Fruited False-Loosestrife Ludwigia polycarpa Endangered

Pale Green Orchis Platanthera flava var herbiola Threatened

Putty-Root Aplectrum hyemale Endangered

Sandbar Cherry Prunus pumila var depressa Threatened



# **BioMap: Species and Natural Communities**

## Leverett

Sandbar Willow Salix exigua Threatened

Sensitive Rare Plant

Tufted Hairgrass Deschampsia cespitosa ssp glauca Endangered

Wild Senna Senna hebecarpa Endangered

Invertebrates

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Arrow Clubtail Stylurus spiniceps Threatened

Cobra Clubtail Gomphus vastus Special Concern

Midland Clubtail Gomphus fraternus Endangered

Riverine Clubtail Stylurus amnicola Endangered

Skillet Clubtail Gomphus ventricosus Special Concern

Spine-crowned Clubtail Gomphus abbreviatus Endangered

Vertebrates

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Bald Eagle Haliaeetus leucocephalus Endangered

Eastern Box Turtle Terrapene carolina Special Concern

Four-toed Salamander Hemidactylium scutatum Special Concern

Jefferson Salamander Ambystoma jeffersonianum Special Concern

Mourning Warbler Oporornis philadelphia Special Concern

Sensitive Rare Vertebrate

Spotted Turtle Clemmys guttata Special Concern

Wood Turtle Clemmys insculpta Special Concern

**Core Habitat BM632** 

Vertebrates

Common Name Scientific Name Status

Eastern Box Turtle Terrapene carolina Special Concern

Four-toed Salamander Hemidactylium scutatum Special Concern

Marbled Salamander Ambystoma opacum Threatened



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http://www.nhesp.org

# **BioMap: Species and Natural Communities**

# Leverett

Core Habitat BM640

Vertebrates

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Water Shrew Sorex palustris Special Concern

**Core Habitat BM667** 

Vertebrates

Common Name Scientific Name Status

Marbled Salamander Ambystoma opacum Threatened

# **BioMap: Core Habitat Summaries**

## Leverett

## **Core Habitat BM522**

This Core Habitat contains several different habitats, from the Connecticut River up to the Mount Toby State Forest. This long stretch of the Connecticut River and surrounding uplands provide valuable habitat for a number of rare dragonfly species, three of which are Endangered, as well as for Bald Eagles. Several rare plant species can be found in different sections of the Core Habitat. The land in and adjacent to Mount Toby State Forest supports significant populations of Eastern Box Turtles and Jefferson Salamanders, as well as other rare vertebrates, and provides key habitat for a variety of birds in an increasingly developed landscape. Mount Toby itself has an outstanding collection of natural communities, including some of the highest-quality rock cliff communities in the state. Parts of this Core Habitat are protected as conservation land, and further habitat protection would help ensure the long-term viability of the rare species found here.

#### Natural Communities

Mount Toby has many wonderful examples of Calcareous Rock Cliffs and Calcareous Talus Forests tucked into its large forested landscape. Calcareous Rock Cliffs are sparsely vegetated cliff communities. Unusual, highly specialized plants and ferns grow in rocks and ledges in the calcium-rich cliff face. This type of cliff community has more species diversity than Acidic Rock Cliffs. Calcareous Talus Forest communities develop on boulder strewn slopes below certain cliffs, with scattered trees, shrubs, vines, and ferns. There is often a gradient of vegetation density as the slope changes, with more trees on the lower slope. These two communities are typically very rich in species and often include many state-listed plants. As they are free of disturbances and exotic invasive plant species, Mount Toby has a collection of some of the highest-quality rock cliff communities in the state. There are also associated calcareous wetland types that are uncommon in the state, such as Calcareous Sloping Fen, Calcareous Seepage Marsh, and Black Ash-Red Maple-Tamarack Calcareous Seepage Swamp.

#### **Plants**

A wealth of plant diversity is present within this large Core Habitat, including one of the state's most viable populations of Autumn Coralroot, a small orchid.

#### Invertebrates

This Core Habitat includes a 13-km stretch of the Connecticut River and surrounding uplands in Deerfield, Whately, Montague, and Sunderland that are critical habitat for a host of rare dragonfly species, including the Spine-crowned Clubtail, Midland Clubtail, and Riverine Clubtail, all Endangered; the Threatened Arrow Clubtail; and the Cobra Clubtail and Skillet Clubtail, both Species of Special Concern. While some portions of the Connecticut River here are within the Connecticut River Greenway State Park, most of the habitat appears to be unprotected. Pollution or hydrologic alterations originating upstream, downstream, or within this Core Habitat are major threats.

# **BioMap: Core Habitat Summaries**

# Leverett

## Vertebrates

This Core Habitat includes an oval-shaped, largely roadless area that encompasses Mt. Toby State Forest and large areas of hilly, mixed forest to the south, nearly ten miles of small brooks and streams, small riparian wetlands, and scattered vernal pools. Significant populations of Eastern Box Turtles and Jefferson Salamanders occur here. Habitat for Wood and Spotted Turtles is present in Long Plain Brook and tributaries of Gunn Brook and associated wetlands. This area also provides a relatively large, unfragmented block of breeding and migration habitat for a variety of forest birds in an increasingly developed Connecticut River Valley. It is transected by two shrubby powerline corridors that provide habitat for Mourning Warblers and other birds of shrublands and forest edges. Much of this area is currently unprotected.

Also included in this Core Habitat are over eight miles of the Connecticut River, including both shorelines and several islands, that provide foraging and perching habitat for wintering and non-breeding Bald Eagles. This area extends from about one mile south of the Sunderland Bridge (Rte. 116) north to the railroad bridge that crosses the river in East Deerfield.

#### Core Habitat BM632

#### Vertebrates

This Core Habitat encompasses an area of rocky, hilly, deciduous and hemlock forest with scattered seasonal pools and forested wetlands that support significant populations of Marbled and Four-toed Salamanders. This area is also inhabited by Eastern Box Turtles, part of a larger population that occurs in and near the Mount Toby State Forest. This Core Habitat includes small wetlands and approximately one-half mile of the headwaters of Doolittle Brook along the western base of Joshua Hill. It is bisected by Long Hill Road, and at present is largely unprotected.

## **Core Habitat BM640**

#### Vertebrates

This Core Habitat encompasses riparian wetlands along two miles of Roaring Brook and several tributaries in Shutesbury. These habitats support Water Shrews, a large long-tailed shrew that has webbed hind feet to aid in swimming. The Core Habitat is bounded along its southern edge by Leverett Road and along its eastern side by Montague Road.

## Core Habitat BM667

#### Vertebrates

This Core Habitat encompasses forested wetlands, rocky deciduous woodlands, and seasonal pools in Leverett. The area provides significant habitat for Marbled Salamanders, which is evident from documented observations and the presence of suitable habitat features.



# **Living Waters: Species and Habitats**

# Leverett

**Core Habitat LW279** 

**Plants** 

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Lesser Bladderwort Utricularia minor Watch Listed

# **Living Waters: Core Habitat Summaries**

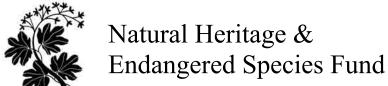
# Leverett

## **Core Habitat LW279**

Leverett Pond supports the Lesser Bladderwort, an uncommon freshwater plant. Bladderworts are carnivorous plants, trapping tiny aquatic animals in their pouch-like "bladders." Native freshwater plants like the Lesser Bladderwort are an important component of aquatic communities, and warrant conservation attention if we are to maintain healthy freshwater ecosystems.

# Help Save Endangered Wildlife!

Please contribute on your Massachusetts income tax form or directly to the



To learn more about the Natural Heritage & Endangered Species Program and the Commonwealth's rare species, visit our web site at: <a href="https://www.nhesp.org">www.nhesp.org</a>.